

Claims

1. A dental hand instrument (10) equipped with an illuminating device (30; 34) for the illumination, by means of a spotlight cone (18), of a site on a tooth (20) to be examined or treated, **characterized in that** means (30; 36) for mixing colored light to said spotlight cone (18) are provided for indicating additional information to an operator of said hand instrument (10) by causing a change of color.
2. A dental hand instrument as defined in claim 1, characterized in that said means (30; 36) consist of illuminants and a control unit, and that said control unit controls the addition of colored light to said spotlight cone (18).
3. A dental hand instrument as defined in claim 1 or claim 2, characterized in that said hand instrument (10) is equipped with a sensor for detecting at least one property of the site of the tooth (20) to be treated and that the output signal thereof is sent to said control unit.
4. A dental hand instrument as defined in any one of claims 1 to 3, characterized in that said illuminating unit (30; 34) is formed by a white light-emitting light source (34), particularly a white light-emitting diode.
5. A dental hand instrument as defined in any one of claims 1 to 4, characterized in that said means (30; 36) for adding colored light comprise at least one colored light-emitting diode (36).

6. A dental hand instrument as defined in any one of claims 1 to 4, characterized in that a multicolored light-emitting diode (30) is provided which, in a first mode of operation, emits white light for illumination of the site to be examined or treated of said tooth (20), and, in a second mode of operation, emits light to which colored light has been added to indicate information additional to that indicated in the first mode of operation.
7. A dental hand instrument as defined in any one of claims 1 to 6, characterized in that said means (30; 36) are designed and adapted to achieve homogeneous addition of colored light to said spotlight cone (18).
8. A dental hand instrument as defined in any one of claims 1 to 7, characterized in that said means (30; 36) are designed and adapted to achieve locally restricted addition of colored light to said spotlight cone (18).
9. A dental hand instrument as defined in any one of claims 1 to 8, characterized in that said hand instrument (10) has a housing having a handpiece (12), at the distal end (14) of which said spotlight cone (18) is emitted.
10. A dental hand instrument as defined in claim 9, characterized in that said handpiece (12) contains an optical fiber (32), which guides the illuminating light and the colored light to the distal end (14) of said handpiece (12) for indication of additional information.

11. A dental treatment center, comprising a sensor for detecting at least one property of a surface of the tooth to be treated, an evaluation unit (62), a control unit, and a hand instrument (10), said hand instrument (10) being equipped with an illuminating unit (30; 34) for illumination, by a spotlight cone (18), of a site to be examined or treated, characterized in that in said hand instrument (10), illuminants (30; 36) are provided for the purpose of adding colored light, said illuminants (30;36) being controlled by said control unit and said evaluation unit (62) processing information from said sensor and cooperating with said control unit in such a manner that a user of said hand instrument (10) will receive information on the property of the surface of the tooth to be treated by in that colored light is added to the spotlight cone (18).
12. A dental treatment center as defined in claim 11, characterized in that said sensor is accommodated in said hand instrument (10).
13. A dental treatment center as defined in claim 11 or claim 12, characterized in that said control unit is accommodated in said hand instrument (10).
14. A dental treatment center as defined in any one of claims 11 to 13, characterized in that said evaluation unit (62) accommodated in said hand instrument (10).

15. A dental treatment center as defined in any one of claims 11 to 14, characterized in that when subregions have been detected which are not in need of treatment within a region of the surface of the tooth which does require treatment, said control unit controls said illuminants (30; 36) so as to add a light which is differently colored from that indicating the regions of the surface of the tooth which are still in need of treatment.
16. A method for indicating at least one property of a surface of the tooth to be treated to a user of a dental hand instrument equipped with an illuminating unit (30; 34) for illumination, by means of a spotlight cone (18), of the site to be treated, the property of the surface of the tooth to be treated being detected by means of a sensor, the signal from the sensor being evaluated by means of an evaluation unit (62), and the evaluated signal being sent to a control unit which controls display means indicating to the user the property of the surface of the tooth to be treated, characterized in that to said spotlight cone (18) of said illuminating unit (30; 34) colored light is added by the use of illuminants (30;36) as display means.
17. A method as defined in claim 16 or claim 17, characterized in that said spotlight cone (18) remains unchanged as long as no property of the surface of the tooth to be treated is recognized.
18. A method as defined in any one of claims 16 to 18, characterized in that when regions of the surface of the tooth to be treated which are not in need of treatment are detected, a first color is added to said spotlight cone (18).

19. A method as defined in any one of claims 16 to 18, characterized in that when regions of the surface of the tooth to be treated that require treatment are detected, a second color is added to the spotlight cone (18) which is distinguishable from said first color.
20. A method as defined in any one of claims 16 to 19, characterized in that the addition of colored light is only carried out in a subregion of said spotlight cone (18).